

# W700

Recloser Controller



## Hardware

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### CPU

Cortex M7

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### Memory

Non Volatile Memory : 2\*16 Mbytes Flash Memory

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### 16-bit A/D Converter

Sampling Rate : 128 Samples / Cycle

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## HMI

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### Display

160\*160 Graphic Lcd (B/W)

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### Keyboard

17 Button

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### Indicator

40 LED Indicator

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## Communication Port

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### Serial Port

Front Panel : HMI Connection  
Side Panel : DNP3.0, IEC60870-5-101, AES 128

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### Ethernet

DNP3.0, IEC 60870-5-104, HMI Connection, AES 128

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### RS485

Modbus RTU

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## Digital Input

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### 10 Points

Open, Close, Mechanical Locked, Gas Low, Door Open, etc.

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### Opto-Isolation

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### Debounce

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### Chattering

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## Digital Output

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### 5 Points

Open, Close, Auxiliary, Alarm

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### Dry Relay

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## Analog Input

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### 10 Points

6 Voltage (A,B,C/R,S,T)  
4 Current (A,B,C,N)

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### Network Frequency

50/60 HZ

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### Rated Voltage

1.7 – 40000 V

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### Rated Current

1-20 A

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## Measurement

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### Voltage

Source, Load  
Phase, Line, Average  
RMS, Fundamental Harmonic & 2<sup>nd</sup> Harmonic

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### Current

Phase, Neutral, Calculated Neutral, Average  
Fundamental Harmonic & 2<sup>nd</sup> Harmonic

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### Power Active

Phase, Total

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### Power Reactive

Phase, Total

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### Power Apparent

Phase, Total

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### Power Factor

Phase, Average

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### Phasor

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### Frequency

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### Temperature

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## Power Quality Monitoring

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### Sag, Swell, Interruption Detection

Status  
Events : Time stamp, Magnitude, Duration  
Counters : Statistics For Each Phase, Duration Classified by IEEE 1159.  
Accumulated Interruption Time  
Waveform Recording On Events

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### THD

Voltage  
Current

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### Sequence Components

Voltage  
Current

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### Harmonics

Components Up to 40<sup>th</sup> Harmonics (Odd/Even)

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### Displacement Power Factor

Phase, Average

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## Demand

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### Fixed Window, Sliding

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### Maximum Demand Profile

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### Time Tag

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### Reset Time

Manual: HMI  
Scheduled: Daily, Weekly, Monthly, Yearly

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### Parameter

Phase Current, Neutral  
Active Power (Phase, Total)  
Reactive Power (Phase, Total)

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## Energy Metering

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### 4-Quadrant Metering, Import / Export Active Energy, Inductive / Capacitive Energy

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### Reset

Manual : HMI

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## Event/Fault Recording

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### Event History Buffers Are Categorized by Group

I/O Events, Function Events, System Events  
Fault Current Events, Fault Location

PQM Events

Demand I,P,Q

Counter : Switch Open, Fault, Restart

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### Fault waveform Recording

8 Faults, 6 PQM Waveforms Can be Stored On Non Volatile Memory

1 Manual Triggered Waveform

Events by Threshold Setting

Counter

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### Load Profile

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## Status Monitoring

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Open/Close

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Mechanical Locked

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Gas pressure Low

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Door Open

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External AC Power

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Fault Indicators

Ia, Ib, Ic, In

SEF

Over Voltage

Under Voltage

Frequency

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Live Line

Source, Load

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Phase Sync

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Recloser Status

Reset

Cycle

Lockout

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Analog Hi/Low Alarm

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Digital Input/Output

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Controller Status(Battery & Battery Charger Test Result)

Battery Low

Battery Fail

Battery Over voltage

Battery Charger Failed

Grounded Battery

Battery Voltage

Battery Test

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Control Status

Operator Place (Local / Remote)

Control Lock / Unlock

Recloser On/Off

Protection On/Off

Ground Protection On/Off

SEF On/Off

Hot Line Tag On/Off

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Switch Control

Operator Place : Remote, Local (Front Panel/PC Tool)

Interlocks : Control Lock, Gas Low, Mechanical Lock, Current Switch

Close interlock Conditions (Selective) : Live Load, Phase Sync. Fail

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SBO (Select Before Operate)

Secure Switch Operation

SBO Timeout (Settable)

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## Protection Function

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### Inverse Over Current

Fast and Delayed TC Trip Elements.

67 Types Of Built In TC Curves (IEC, ANSI, Recloser Curves) and 4 Customized TC Curves Definite Time

Phase

Negative

Earth

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### Definite Over Current

Phase

Negative

Earth

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### Instantaneous Over Current (2 Elements)

Phase

Negative

Earth

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### SEF (Sensitive Earth Fault) Detection

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### IEF (Intermittent Earth Fault)

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### Broken Conductor

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### Synchronism Check

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### Over Voltage

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### Under Voltage

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### Ground Over Voltage

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### Over Frequency

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### Under Frequency

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### Hot Line Tag

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### Direction Detection

Phase

Negative

Earth

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### Cold Load

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### Inrush Restraints

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### Sequence Coordination

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### Auto Reclosing Sequence

Phase

Negative

Earth

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### 2<sup>nd</sup> Harmonic Detection

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### Open Line Detection

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## Automation

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### Auto Sectionalizing

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### Loop Automation

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### Automatic Source Transfer Switch

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## Auxiliary Function

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### PC Software For Setting & Maintenance

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### Waveform Evaluation Software

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### Firmware Upgradable

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## Accuracy

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Voltage

$\pm 0.5\%$  or  $\pm 0.1\text{kv}$

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Current

$\pm 0.5\%$  or  $\pm 1\text{A}$

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Power Factor

$\pm 0.5\%$

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Power (Active, Reactive, Apparent)

$\pm 1\%$

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Energy (Active, Reactive)

$\pm 2\%$

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Frequency

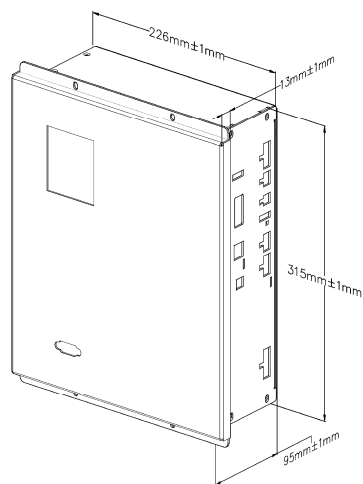
$\pm 0.02\%$

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## Installation

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Front Panel Mount



## Environment Conditions

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Operating temperature

-25 ~ +70 °C

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Humidity < 95% RH

Altitude < 2000m

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## Standard

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Insulation resistance	IEC 60255-27
Impulse voltage	IEC 60255-27
Insulation surface	IEC 60255-27
Electrostatic discharge immunity test	IEC 61000-4-2
Radiated, radio-frequency, electromagnetic field immunity	IEC 61000-4-3
Fast transient noise	IEC 61000-4-4
Impulse Surge	IEC 61000-4-5
Immunity to conducted disturbances, induced by radio-frequency fields	IEC 61000-4-6
Power frequency magnetic field immunity test	IEC 61000-4-8
Damped oscillatory wave immunity test	IEC 61000-4-18
Voltage dips, short interruptions and voltage variations on DC	IEC 61000-4-29
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6
NPS (Negative Phase Sequence)	IEC 60255-151
SEF (Sensitive Earth Fault)	IEC 60255-151
Phase Sync	IEC 60255-151
Digital Output Test	
Select Before Operate (SBO)	IEEE C37.1
Monitor output command	IEEE C37.1
Test the activation time of a digital output	IEEE C37.1
Debounce	IEEE C37.1
Chattering	IEEE C37.1
Burden	IEEE C37.1
Over Input Signal Rating	IEEE C37.1
Maximum Operating Common mode Voltage	IEEE C37.1
Common mode Rejection Ratio	IEEE C37.1
Positive Ground Protection	IEEE C37.1
Reverse Polarity	IEEE C37.1
Over load Protection	IEEE C37.1
Short Circuit Protection	IEEE C37.1
CISPR22	